

IN THE CLAIMS:

Please add the following new paragraph before the first claim:

We claim:

1-11 (Canceled)

12 (Withdrawn)

The apparatus as claimed in Claim 11, characterized in that the electrode applicator (23) is of a size and configuration which is adapted to the vessel, bodily aperture or bodily cavity where it is to be placed.

13-41 (Canceled)

42. (New)

An apparatus for treating tissue or organs, said apparatus comprising:
a plurality of electrodes arranged in an electrode applicator adapted for placement within a restricted region of the tissue or organ,

a high voltage generator arranged to generate and deliver one or more high voltage pulses to said plurality of electrodes,

an impedance measuring unit arranged between the plurality of electrodes to measure impedance within said restricted region before, during and after application of said one or more high voltage pulses at a plurality of frequencies, and

a registration and conversion device, arranged between said high voltage generator and said impedance measuring unit to receive signals from the impedance measuring unit and emit signals to the high voltage generator to control the pulses produced thereby.

43. (New)

The apparatus according to claim 42, wherein said high voltage generator generates the high voltage pulses at a value high enough to produce cell electroporation.

Sub
E1
DI

44. (New) The apparatus according to claim 42, wherein the registration and conversion device correlates impedance measurements with a degree of electroporation of the cells in the tissue or organs and emit signals to the high voltage generator to adjust or terminate the pulses when a desired treatment effect is obtained.

45. (New) The apparatus according to claim 44, wherein the registration and conversion device emits signals to the high voltage generator during the pulses to adjust the pulses so that a predetermined field strength in the tissue or organs is obtained.

46. (New) The apparatus according to claim 44, wherein said one or more high voltage pulses has a pulse length of approximately 0.1 to 200 ms.

47. (New) The apparatus according to claim 46, wherein the impedance measuring unit measures at frequencies within the range of 10 Hz to 10 MHz.

48. (New) The apparatus according to claim 47, wherein the impedance measuring unit measures at frequencies within the range of 40 Hz to 2 MHz.

49. (New) The apparatus according to claim 48, wherein the impedance measuring unit measures at frequencies within the range of 10 Hz-200kHz.

50. (New) The apparatus according to claim 49, wherein the impedance measuring unit measures at frequencies within the range of 40 Hz to 100 kHz.

51. (New) The apparatus according to claim 50, wherein the impedance measuring unit measures at frequencies within the range of 100 Hz to 10 kHz.

52. (New) The apparatus according to claim 51, wherein said one or more high voltage pulses is set to a repetition frequency of approximately 0.1 to 10000 cycles per second.

53. (New) The apparatus according to claim 52, wherein said one or more pulses

has an amplitude of approximately 50 to 6000 V.

54. (New) The apparatus according to claim 53, wherein said one or more pulses is selected from the group consisting of mono-polar square wave pulses, mono-polar exponential decaying pulses, bipolar square wave pulses, bipolar exponential decaying pulses and sinusoidal bipolar pulse trains.

55. (New) The apparatus according to claim 54, further comprising sensors arranged to detect electric fields formed by the electrodes connected to the registration and conversion device to measure magnitude of the electric field.

56. (New) The apparatus according to claim 55, further comprising sensors arranged to detect the distance between the electrodes connected to said registration and converter device which adjust the voltage between said electrodes based on the detected distance between the electrodes.

57. (New) The apparatus according to claim 56, wherein the registration and conversion device is a computer.

58. (New) The apparatus according to claim 57, wherein the registration and conversion device is a microprocessor.

59. (New) The apparatus according to claim 58, wherein said electrodes are respectively connected to one or both of said voltage generator and said impedance measuring unit.

60. (New) The apparatus according to claim 59, further comprising means for supplying at least one therapeutic substance, genetic material and ionizing radiation to said tissue or organ.

61. (New) The apparatus according to claim 60, wherein said electrodes are in the

form of needles or stilettos.

62. (New) The apparatus according to claim 61, wherein said electrodes are surrounded by an electrically insulating layer.

63. (New) The apparatus according to claim 62, wherein said electrode applicator includes a fixture arranged to position the electrodes.

64. (New) The apparatus according to claim 63, wherein said fixture is provided with a number of holes arranged to place the electrodes in a desired pattern.

65. (New) A method in which the apparatus according claim 42 is used in which the treatment of tissue or organ is performed until the impedance decreases.

66. (New) A method in which the apparatus according to claim 42 is used in which the treatment of tissue or organ is performed until the impedance increases.

67. (New) The method according to claim 65, wherein 1-2000 pulses are used.

68. (New) The method according to claim 66, wherein 1-2000 pulses are used.

69. (New) The method of claim 65 for the treatment of tumors.

70. (New) An apparatus for treating tissue or organs, said apparatus comprising:
a plurality of electrodes arranged for placement within a restricted region of the tissue or organ to be treated,

a high voltage generator arranged to generate and deliver one or more high voltage pulses to said plurality of electrodes,

an impedance measuring unit arranged between the plurality of electrodes to measure impedance of the restricted region before, during and after application of said one or more high voltage pulses at a plurality of frequencies, and

a registration and conversion device, communicating with said high voltage generator

and said impedance measuring unit to receive, store, and compare impedance measurements from the impedance measuring unit and to control the high voltage generator such that the high voltage pulses to be delivered to said plurality of electrodes produces a constant electric field within the restricted region.

Sub
E1

D1

71. (New) A method for implementation in an apparatus for treating tissue or organs having a plurality of electrodes adapted for placement within a restricted region of the tissue or organ, a high voltage generator arranged to generate one or more high voltage pulses to said plurality of electrodes, an impedance measuring unit arranged between the plurality of electrodes to measure impedance before, during and after application of said one or more high voltage pulses at a plurality of frequencies, and a registration and conversion device communicating with said impedance measuring unit and said high voltage generator to receive impedance measurements measured by the impedance measuring unit and to control said high voltage generator, said method comprising the steps of:

receiving an initial impedance measurement measured by the impedance measuring unit before the one of more high voltage pulses to be generated by the high voltage generator,

storing the impedance measurements received in the step of receiving an initial impedance measurement,

emitting an initial control signal to the high voltage generator to generate a high voltage pulse based on the impedance measurement received in the step of receiving an initial impedance measurement,

receiving an intermediate impedance measurement measured by the impedance measuring unit during the one or more high voltage pulses to be generated by the high voltage generator,

storing the impedance measurement received in the step of receiving an intermediate impedance measurement,

obtaining an assessment by assessing effects of the one or more high voltage pulses generated by the high voltage generator by comparing the initial impedance measurement stored in the step of storing the initial impedance measurement and the intermediate impedance measurement stored in the step of storing the intermediate impedance measurement, and

emitting a signal to the high voltage generator to adjust or terminate the high voltage pulses base on the assessment obtained in the step of obtaining an assessment.

72. (New) The method according to claim 71 wherein the impedance is measured at a plurality of frequencies and the application of high voltage pulses is terminated after values of impedance at said plurality of frequencies reaches a constant value.

73. (New) The method according to claim 72 wherein a medical treatment substance is introduced into the body prior to application of high voltage pulses or after the registration and conversion device has terminated the application of high voltage pulses.

74. (New) The method according to claim 73 wherein the treatment substance is introduced by injection.

75. (New) The method according to claim 71 wherein the high voltage is applied for a short period of about 32 pulses.